

Serial No. 10/786,854
Confirmation No. 3632

AMENDMENT

In the Specification, amend the Abstract as follows:

A method of power factor control for a power regulation system connected for supplying electric power to a reactive load, the power factor being characterized by a phase difference between a voltage waveform and an induced current waveform, the method comprising the steps of identifying a peak of an AC current waveform and a peak of an AC voltage peak waveform, determining a time delay between a designated peak of a half cycle of the voltage waveform and a peak of a corresponding half cycle of the current waveform; and adjusting the voltage applied to the load in a manner to vary the time delay so as to bring the power factor towards unity.

The present invention is illustrated in a method of power factor control for a power regulation system connected for supplying electric power to a reactive load. The system includes a microcomputer for supplying gating signals to an electronic switching device such as a triac for controlling the conduction phase angle of the triac to control the application of alternating current (AC) electric power to the load. The method comprises monitoring of the waveform of the AC voltage applied to the load and determining for each of the half cycles of the waveform a timed event when the absolute value of the magnitude of the waveform transitions through a reference magnitude.

A peak of the voltage waveform is determined. The process is repeated for the AC current waveform and the corresponding peaks of the current waveform identified. The time delay between a designated peak of the

Serial No. 10/786,854
Confirmation No. 3632

~~voltage waveform and a designated peak of a corresponding half-cycle of the current waveform is representative of the power factor of power supplied to the load and the applied voltage is adjusted in a manner to bring the power factor towards unity, i.e., by reducing the measured time delay. The system also monitors peak values of the AC current and limits the power factor adjustment to prevent current values from falling below a selected minimum value so as to prevent motor stall or overheat. Typically, the adjusting process removes voltage from the load for a portion of each half-cycle of the AC voltage waveform either by gating the triac out of conduction at beginning or end of a half-cycle or by pulse width modulation.~~

Serial No. 10/786,854
Confirmation No. 3632

In the Specification, amend the claims as follows:

1. (currently amended) A method of power factor control for a power regulation system connected for supplying electric power to a reactive load, the power factor being characterized by a phase difference between a voltage waveform and an induced current waveform, the method comprising the steps of:

~~identifying an absolute value of a magnitude on a peak of an AC current waveform and a peak of an AC voltage peak waveform waveform in a corresponding half cycle;~~

~~determining a time delay between a designated peak of one-a half cycle of the voltage waveform and a designated peak of a—the corresponding half cycle of the current waveform wherein the time delay is representative of the power factor of power supplied to the load; and~~

~~comparing the magnitude of the AC voltage waveform to a pre-selected magnitude; and~~

~~adjusting the voltage applied to the load in a manner to vary the time delay so as to bring the power factor towards unity.~~

2. (currently amended) The method of claim 1 and including the step of monitoring peak values of the AC current ~~representative~~ waveform and limiting ~~the~~ a power factor adjustment to prevent respective current values from falling below a selected minimum value.

3. (original) The method of claim 1 wherein the step of adjusting includes the step of removing voltage from the load for a portion of each half-cycle of the AC voltage waveform.

4. (original) The method of claim 2 further comprising monitoring load states and limiting the power factor adjustment based on the load state.

5. (currently amended) The method of claim 1 wherein the step of adjusting further comprises providing the a control system includes- with at least one controllable electronic switch coupled in series circuit between the

Serial No. 10/786,854
Confirmation No. 3632

~~an AC power source and the load, the method of adjusting comprising gating the electronic switch out of conduction for a portion of each half cycle of the AC voltage waveform.~~

6. (original) The method of claim 1 wherein the step of determining a time delay comprises estimating the time delay.

7. (currently amended) The method of claim 5-8 wherein the step of gating includes pulse width modulation of the voltage waveform.

8. (new) The method of claim 5 wherein the step of adjusting further comprises gating the electronic switch out of conduction for a portion of each half-cycle of the AC voltage waveform.

9. (new) The method of claim 1 further comprising comparing the peak of the AC voltage waveform to a pre-selected magnitude.

10 (new) The method of claim 1 wherein determining a time delay between a peak of a half cycle of the voltage waveform and a peak of a corresponding half cycle of the current waveform further comprises determining a time delay between a designated peak of a half cycle of the voltage waveform and a designated peak of a corresponding half cycle of the current waveform.